

Waqar Ahmad, Project Manager Department of Toxic Substances Control 700 Heinz Avenue, Suite 200 Berkeley, CA 94710

Hemant Patel, Project Manager US Department of Energy P. O. Box 54 Oakland, CA 94612

June 7, 2005



Re: General comments on the Lawrence Berkeley National Laboratory's Draft Corrective Measures Study (CMS), California Environmental Quality Act (CEQA) Initial Study, Negative Declaration, Statement of Basis and Environmental Assessment under the National Environmental Policy Act (NEPA).

Dear Mr. Ahmad and Mr. Patel,

The following comments represent years of community effort, frustration and disappointment with regulators in our commitment to analyze, inform, and insist on seriously cleaning up Lawrence Berkeley National Laboratory site's radioactive and hazardous chemical contamination from the air, soil, soil water, groundwater, creeks, trees, vegetation, and aquatic species on the University of California lands in the headwater areas of the Strawberry Creek watershed in Berkeley and Oakland.

DANGEROUS TOXIC CONTAMINANTS WILL REMAIN IN SOIL AND GROUNDWATER!

The proposed CMS report is a good start but certainly it does not qualify to be called site cleanup, but rather it is a token cleanup plan that will leave in place at least 80% of the existing, known contamination for future generations to deal with. The CMS process is being used to facilitate LBNL's application to renew its Hazardous Waste Handling Facility's operating permit. LBNL is a contaminated site that needs immediate, comprehensive cleanup and a Groundwater/Surface Water Monitoring and Management Plan.

We ask that DTSC require LBNL to include an analysis of the Environment Impacts from the proposed and continued operations of the Lab's Hazardous Waste Handling Facility (HWHF) in LBNL's Long Range Development Plan Environmental Impact Review (LRDP EIR), currently under preparation. In addition, we request that DTSC postpone its decision regarding the LBNL HWHF permit renewal until after the LRDP process has been completed. (Attachment A.)

15 YEARS OF INVESTIGATIONS WITHOUT MEANINGFUL COMMUNITY INPUT!

The lack of any meaningful citizen participation caused the Berkeley City Council on November 2, 1999, to formally request that members of the Berkeley community be included at the RCRA Quarterly Review Meetings (Attachment 1.). DTSC, Department of Energy (DOE) and LBNL all refused to allow any community participation at those meetings.

Instead, the Lab's response was to provide only an hour-long presentation, just four times per year, by a LBNL representative at 6PM before the officially scheduled Community Environmental Advisory Commission's (CEAC) meeting at 7PM. This untimely arrangement was poorly noticed and attended, providing no chance for the public to gain comprehensive understanding of the RCRA activities at LBNL. Nor was there any time for meaningful discussion or input.

DTSC has failed to engage the public and for this reason we request that DTSC sponsor a representative Community Advisory Group that would be involved in the development of the Groundwater/Surface Water Monitoring and Management Plan. (Attachment 2.)

HISTORY/BACKGROUND OF CONTAMINATION AT LBNL

The Lab originated on the UC Berkeley Campus in 1932 as the UC Radiation Laboratory (the Rad Lab). In 1940 it was relocated to its present site in the Strawberry Creek Watershed in the steep Berkeley Hills, east of the Central Campus next to the Hayward Earthquake Fault. The first major facility, the 184" Synchrocyclotron was built with funds from both private and university sources. After 1948, the US Atomic Energy Commission and its successor agencies funded the Lab. In 1972 the name was changed to from the Lawrence Radiation Laboratory to Lawrence Berkeley Laboratory.

For the past 65 years radioactive and chemical releases, and accidents have contaminated the once beautiful, pristine watershed of the Strawberry Canyon and nearby wild lands, affecting neighboring residents, and school children attending the Lawrence Hall of Science, as well as people recreating on the canyon trails, swimming etc. (Attachment 3.)

The first Environment, Health and Safety related assessment of LBNL made by DOE was published in 1988. This first assessment was followed by the Tiger Team Report of 1991 which found 678 violations of DOE regulations concerning management practices at LBNL, finding Berkeley-Oakland air, soil, and water contaminated with tritium, other radioactive substances and toxic chemicals. It is indisputable that the Lab was not in compliance with federal standards for radioactivity in air. Because of these findings, DOE funded the California Agreement in Principle (AIP) Program to be conducted by the California Department of Health Services (DHS), which has jurisdiction over radioactivity in California.

In September of 1995, the DHS Environmental Management Branch released the AIP Annual Report. (Attachment 4.) One of the AIP Report's criticisms was over the "efficiency and validity of the methods employed at LBNL to measure and monitor

airborne tritium" (p.14). We believe this criticism caused DOE to cut the funding for the entire AIP Program a few months later. DOE then took control over the handling of the 8 radioactively contaminated sites at LBNL for which the DHS Report had expressed serious concern. To date, no report has been released for public review and comment regarding corrective action for clean up of these radioactive sites!

In July of 1998 the US Environmental Protection Agency determined, based upon a preliminary Hazard Ranking System (HRS) score, that LBNL was eligible for the National Superfund Priorities List, (NPL) under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or "Superfund"). (Attachment 5.)

At that same time, the State of California had listed six locations at LBNL in the Hazardous Waste and Substances Sites List, aka the Cortese List. (Attachment 6.) And more recently in 2001, LBNL was included in the government list of cold war nuclear sites as a "California Hot Spot", because the facility handled Beryllium or radioactive materials. (Attachment 7.) These facts reflect both the complexity and extent of the environmental impacts that LBNL operations have had on the Strawberry Creek Watershed lands in the Berkeley hills.

CMS REPORT LACKS A COMPREHENSIVE, COHESIVE, VERIFIABLE GEOLOGIC MAPPING OF THE STRAWBERRY CREEK WATERSHED AREA AT LBNL, AS WELL AS THE SYNTHESIS OF SURFACE AND SUBSURFACE GEOLOGIC INFORMATION

LBNL is located in an area that is seismically very active, i.e. next to the Hayward Fault. (Attachment 8.) It is for this reason that the Final CMS Report should include comprehensive, verifiable geologic mapping of Strawberry Canyon, which depicts bedrock outcrops and geomorphic features including stream courses and landslides. It should also include the synthesis of surface and subsurface geologic information previously developed independently for the University of California at Berkeley (UCB) and LBNL.

The LBNL Environmental Restoration Program has produced small scale, mostly building specific maps of areas where known activities had resulted in contamination of soil and groundwater. This piecemeal approach to understanding site geology has seriously narrowed the site investigations and discussions about overall impact of the contamination on the Strawberry Creek Watershed. We therefore ask that DTSC:

- Resolve confusion about the location of geological units and associated faults by locating verifiable bedrock outcrops as the basis for geologic interpretation;
- Provide a common base of geologic information, identify sites of slope instability, especially those associated with groundwater, faults and bedrock contacts;

• Synthesize preexisting surface geologic and geotechnical information for the entire Strawberry Creek Watershed.

A unified site-wide approach would provide the necessary information to better assess surface and groundwater pathways of contaminants such that an effective groundwater monitoring and management plan can be developed. This would include stream networks, geology, faults, landslides, all areas of contamination evaluated in the RCRA process, all sewer lines and hydraugers, storm drains and springs, etc.

EARTHQUAKE DISASTER: POTENTIAL HAZARD LANDSLIDE ZONES

On February 14, 2003 the California State Department of Conservation Geological Survey released the final seismic hazard maps that illustrate the seismic hazard zones of the University of California lands, of Berkeley and Oakland (including LBNL), that encompass areas prone to soil liquefaction (failure of water saturated soil) and earthquake induced landslides.

In spite of the contention of the CMS report, areas of contamination cannot be considered "contained" in earthquake potential hazard landslide zones that appear on the Seismic Hazard Maps. Landslides break roads, buildings and even borders of contaminant plumes, cause underground soil erosion, subsidence, lateral spreading and collapse. Disturbed lands allow contaminants to migrate in the soil, soil water, groundwater, storm drains and creeks into residential neighborhoods putting at risk human and ecological health. It appears that the RCRA/CMS reports do not address such a disaster potential predicted in the event of a strong earthquake on the Hayward Fault within the next 30 years by the US Geological Survey. Nor does the CMS report acknowledge the geologic impact on the site contamination as seen in the changes in plume sizes, shapes and movement since 1992. (Attachment 9.)

STRAWBERRY CREEK WATERSHED

The text of the Human Health Risk Assessment (May 2003) fails to acknowledge the historical creek restoration work and laboratory studies that have been carried out on the Upper Canyon reaches of Strawberry Creek, as well as the Campus Strawberry Creek Watershed Management Plan and the entire daylighted portions of Strawberry creek flowing into the San Francisco Bay.

The Urban Creeks Council, Friends of Strawberry Creek, and countless students work in the waters and along banks to clean up trash and debris, weed infestations of non-native plants, restore banks with native plants, test and GIS the streams on a year round basis. The Incremental Lifetime Cancer Risk (ILCR) theoretical modeling only calculates surface water exposure to a "recreational receptor" of the "residential scenario", without acknowledging those workers involved in creek restoration as receptors too.

RCRA/CMS reports fail to consider the historical Map of Strawberry Valley and Vicinity Showing the Natural Sources of Water Supply of the University of California by Frank Soule, Jr., Professor of Engineering, 1875 (Attachment 10). Today, 130 years later,

several dozen creeks and their tributaries, as reflected on the Soule Map, are well known Mediterranean streams and appear on LBNL's Annual Site Environmental Reports. These include Berkeley Creek, Blackberry Creek, aka North Fork of Strawberry Creek, Cafeteria Creek, Ravine Creek, Ten-Inch Creek, Chicken Creek, No-Name Creek, South Fork of Strawberry Creek, Botanical Garden Creek, Banana Creek, Pineapple Creek, etc., and close to 30 springs.

The significance of the creeks as conduits for migrating contaminants from soil runoff, seepage from underground plumes etc., such as is the case with Chicken Creek and the tritium groundwater plume, has not been addressed. (Attachment 11.) There has been no evaluation of the potential health hazards following a seismic event or of the soil liquefaction potential/soil failure within the creek basins that lace the Strawberry Creek Watershed.

WATER QUALITY, GEOLOGY AND SOILS, BIOLOGICAL RESOURCES, HAZARDS AND HAZARDOUS MATERIALS, AND HYDROLOGY ISSUES WITHIN THE WESTERN HALF OF LBNL.

The Bevatron, a decommissioned particle accelerator, is located on a four-acre site in the western portion of LBNL within the Blackberry Creek (a.k.a. the North Fork of Strawberry Creek) Watershed. The site is in the Hayward/East Canyon/Wildcat Canyon Earthquake Fault Zone, surrounded by at least two cross faults: the Cyclotron Fault to the south and the New Fault to the north. Currently the Bevatron and Building 51 are under review for potential demolition. This site is central to the CMS cleanup evaluation but many questions have not been answered or information provided about the site.

The Final CMS Report must include:

- 1. a comprehensive earthquake fault map that would include all the faults in the entire Strawberry Creek Watershed, whether active or not, and an interpretation of the significance of the presences of these faults regarding the transport of surface, soil and groundwater within the LBNL site.
- 2. a watershed map for the LBNL hill site showing the various watershed and subwatershed divides with a detail of the Blackberry Creek watershed and the four-acre Bevatron site as well as the Strawberry Creek watershed including the Chicken Creek sub-basin and the East Canyon area above the UC Botanical Garden.
- 3. a Seismic Hazard Zone Map which would show areas in the Strawberry and Blackberry Creek Watersheds where previous landslides had occurred, as well as all topographic, geological, geotechnical, and subsurface water conditions which indicate a potential for permanent ground displacement.

It should be noted that in a 1949 geologist (C. Marliave) report on the bedrock conditions at the Bevatron site "...the area at the Bevatron is to be excavated and leveled off to elevation 710. The bedrock beneath this beveled surface will be comprised of poorly consolidated Orinda sediments... The Orinda formation absorbs water freely and the lava flows and breccia that are associated with it are also quite pervious so that the whole mass becomes readily saturated... There appears to have been considerable land sliding in

the amphitheatre in which the Bevatron is to be located - and during periods of heavy rainfall, the underlying Orinda sediments become quite soft from absorbed water... seeps come out of the ground in many place, there are two known permanent springs in the area where tunnels have been driven into the hillside and pipes leading out from the caved entrances have been flowing water for many years". (Attachment 12.)

Further, though landslide deposits may have been modified or have fill placed over them, their subsurface characteristics/failure planes may exert controls on groundwater flow patterns and thus on the movement contaminant plumes at the hill site. Mapping of the historic landslide distribution in the Final CMS Report is extremely important for understanding/interpreting how the contaminant plumes may be distributed on the hill.

- 4. the current configuration and condition of the engineered drainage around the Bevatron site. How is groundwater from the seeps and springs intercepted and captured? Where are water sources diverted? Do creek beds of the historic creeks function as conduits for these waters? According to the 1875 F. Soule Map titled: Strawberry Valley and Vicinity Showing the Natural Sources of the Water Supply of the University of California, at least two of the branches of the North Fork of Strawberry Creek were located directly under the Bevatron Complex. The Final CMS Report should provide a historic map of the site showing these watercourses and their current state.
- 5. a geologic cross section of each plume to show the depth and concentration of groundwater contamination in the four-acre Bevatron site and vicinity. According to the Environmental Checklist's Project Description for the proposed demolition of the Bevatron: "Soil and groundwater contamination are known to be present in some areas beneath Building 51 /Bevatron." The primary known chemicals of concern are chlorinated volatile organic compounds (VOCs) in soil and groundwater. In addition, PCBs have been detected in some groundwater samples. Contamination in soil, outside the plume source areas, has included primarily chlorinated VOCs, petroleum, aromatic hydrocarbons, polycyclic aromatic hydrocarbons, PCBs and Mercury. Three groundwater plumes converge at the Bevatron site: Building 51/64 VOC plume, Building 7 Freon/VOC plume and the old town VOC/Building 7 Diesel plume.

It appears that the location of the groundwater monitoring wells in the general Bevatron site is insufficient to characterize the full extent of these plumes.

Are the contamination plumes interrelated? It appears that there are no groundwater sampling wells located in the basement of the Bevatron core area. A sampling strategy must be developed and implemented prior to the publication of the Final CMS Report to characterize and provide comprehensive data on the extent of the potential groundwater contamination plume under the Building 51/Bevatron. Soil boring(s) and testing should be part of this investigation.

6. the potential effects of the increased rainfall on the now pervious site, if the Bevatron structure is removed. What protections will be put in place in the future site design to protect further impact of rainwater on existing groundwater plumes? How will the increased groundwater influence slope stability? In addition to the Bevatron core area, more monitoring wells should be located laterally along the Cyclotron Fault and New Fault because they could act as conduits for the contaminated groundwater.

- 7. additional groundwater monitoring wells are needed (a) west of the northern lobe of the Building 51/64 plume as well as (b) west of the western lobe of Building 71 solvent plume to show whether the two plumes converge into a topographic swale and (c) west of the old town plume, specifically in the area between Buildings 46 and 51. All of these plumes are in the Blackberry Creek Watershed and drain west toward the city of Berkeley and San Francisco Bay. (Attachment 13.)
- 8. how the removal of the Bevatron (a concrete plug) and its subterranean structures impact the movement and current hydraulic controls of these groundwater contamination plumes. This factor alone is reason for additional groundwater evaluation and monitoring wells. How is LBNL preparing to prevent any contamination from entering the creeks and ending up in downtown Berkeley where Strawberry Creek flows day lighted through many public and private properties? For this reason, all site clean-up must be done to residential standards.
- 9. a description of the air monitoring systems LBNL has in place to determine any changes in air quality during the corrective measures process.
- 10. the effects on the potential beneficial uses of Berkeley's large aquifer, e.g. availability in times of drought. Of special concern is the Lennert Aquifer, currently pumped by the Shively well #1. The Final CMS Report should provide an update on the pumping rates, water quality, where the water is currently being dumped and why. (Attachment 14.)
- 11. the potential effects upon the endangered Alameda Whipsnake for which the LBNL site is critical habitat. The Final CMS Report should evaluate the cumulative and significant effects, on the human (and endangered Alameda Whipsnake) environment, with the implementation of the corrective measures that proposes to leave some 80% of the existing contamination in place, concurrent with the Bevatron demolition, decommissioning and decontamination of the National Tritium Labeling Facility and the construction and operation of the Molecular Foundry.
- 12. a comprehensive description of the various beam targets (including the magnet gap) and the beam dump areas during the Bevatron's forty-year history, and a sampling strategy to determine where the highest concentrations and types of radioactivity and toxic chemicals/solvents are located.
- 13. all the stable isotope studies performed at LBNL, in the early 1990s (Attachment 4, page 9.) and in 1998-2000 when LBNL conducted stable isotope studies to characterize the hydrogeology of the site. Further, we ask that stable isotope studies be used as part of the development of the new Groundwater Monitoring and Management Plan.
- 14. in the Statement of Bases regarding compliance that compliance be determined only after each monitoring well demonstrates measurements lower than the MCLs for at least eight (8) consecutive quarters. This would be a change to the current proposal to certify LBNL to be in compliance when multiple well data is averaged over four quarters and the average for these wells is below the MCL.
- 15. carefully considered alternatives to demolition and removal that would allow the Bevatron and its contamination to remain on site in relative containment. On site containment will allow the radioactivity to decay in place and not be hauled away to impact other communities. This option would save taxpayers millions of dollars and save

many communities from the serious potential pollution which the demolition, transportation, and waste dumping would bring about.

The projected cost of 85 million dollars for the Bevatron demolition and removal is truly appalling taking into consideration the enormous initial cost of the construction of the facility in the early 1950s, which was approximately 10 million dollars. Since the 4 acre Bevatron site is part of the current cleanup effort outlined in the Draft CMS Report, we propose that some of those funds be used for DTSC to sponsor a Citizen Watershed Advisory Group. Furthermore, in a June 2, 1993 Bay Guardian article "DOE considers the pollution serious enough to spend 82.6 million dollars to cleanup LBNL." We would like to have a full public accounting as to how this money has been spent over the last dozen years. (Attachment 15.)

16. an evaluation of the Chicken Creek tritium and collocated radioactive solvent plumes, as well as the diesel plume in the east canyon above the Botanical Garden. Special cleanup strategies must be considered for these areas in addition to a very carefully developed monitoring plan, using stable isotope studies. (Attachment 16)

GROUNDWATER PRESERVATION

Our Berkeley city government has communicated to the Regional Water Quality Control Board that the City and citizens of Berkeley strongly oppose the imposition of risk-based clean-up standards, which permit significant amounts of federally generated contamination to remain in place at LBNL that threatens groundwater in the Berkeley/Oakland hills. The City of Berkeley has a history against the use of risk based corrective actions as a first measure of hazardous materials clean-up.

City policy, like that of the state water codes (Porter Cologne Act) contains a significant principle that resources that are deemed to have existing and potential groundwater beneficial uses should be preserved. Similarly, the state water board has a non-degradation policy. This means that the first consideration for any site clean-up is that it should be brought back to the pristine condition in which it was found.

The City of Berkeley's comment letter to LBNL dated November 26, 2003 states the following "Should DOE reduce its budget for clean-up at LBNL, the facility will not meet any restrictive cleanup goals. Mitigation measures should be expressed as measures required to comply with the most restrictive applicable standards to insure implementation of such requirements regardless of changes in Federal funding for remediation."

Deed restrictions should <u>not</u> be used as a last resort for failure to clean up since they are more clearly associated with Brownfields than they are with a successful clean-up. Brownfields are generally used in depressed areas where the contamination will not be cleaned up due to the absence of a responsible party and/or general economic depression. Berkeley is not depressed economically nor is the federal government. Thus, LBNL/DOE does not require either the use of deed restrictions or Brownfields.

Preservation of the groundwaters of the State of California must be of the highest priority. The Berkeley City Council and its environmental commission support full environmental restoration at LBNL so as to preserve the Berkeley/Oakland hills groundwater for future generations. This is mandatory because in an emergency Berkeley groundwater will be used for domestic, municipal, irrigation and industrial purposes. Today, the LBNL site is contaminated by the presence of large quantities of radionuclides and 162 contaminants including Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs), Pesticides, Fuels, Metals and Freon.

The official Zoning Map of the city of Berkeley designates the UC hill campus lands, including LBNL, as a residential district. This zoning permits, for instance, the construction of residential structures such as apartments and hotels that will provide housing opportunities for transient or seasonal residents. LBNL/DOE must evaluate the cleanup scenarios within the context of actual residential zoning and land use provisions. The city of Oakland's land use designation (S-7 Preservation) for the UC/LBNL hill area is Park, Recreation or Natural area or Watershed. (Attachment 17.)

COMMUNITY WATERSHED ADVISORY GROUP (CAG) TO OVERSEE ENVIRONMENTAL CLEANUP AT THE LAWRENCE BERKELEY NATIONAL LABORATORY

In addition to the four hundred (400) signatures already submitted at the May 26, 2005 Public Hearing showing considerable community interest in environmental issues related to the LBNL site, we now are submitting over eighty (80) additional signatures on petitions requesting that the State of California Department of Toxic Substances Control (DTSC) sponsor a representative citizen's watershed advisory group to participate in the implementation of the environmental cleanup at the Lawrence Berkeley National Laboratory. This DTSC sponsored community advisory group, (CAG) would be involved in the development of the Groundwater Monitoring and Management Plan for the Laboratory site, located in the Strawberry Creek Watershed.

DTSC has failed to adequately engage the Berkeley public in the RCRA process and for this reason we request that DTSC support our community's desire for more involvement and grant our request now for a DTSC sponsored CAG.

IN SUMMARY WE CALL FOR A SOURCE WATER PROTECTION PLAN

For the intent of the Resource Conservation and Recover Act, we call for a Source Water Protection Plan to conserve and recover the Upper Strawberry Creek Watershed that is still impacted by spreading toxic groundwater plumes. In this regard, we request a comprehensive watershed analysis be conducted, including the drinking water bank, Lennert Aquifer, and its groundwater movements feeding Strawberry Creek tributaries for a healthy environmental recovery.

We call for an Ecological Protection Zone in the Strawberry Creek Canyon and the Berkeley-Oakland Hills to conserve and protect human and ecological life from further harm in the 21st Century.

As part of the Corrective Measures Study we call for a state-of-the-art assessment of 1). LBNL contamination using GIS mapping data of all the water sources, 2) the earthquake faults from the Hayward Fault Zone to the East Canyon/Wildcat Fault Zone, including, but not limited to the following cross faults the New Fault, the University Fault, the Cyclotron Fault, the Strawberry Canyon Fault.

We further request that the cumulative environmental impacts of the 174 radioactive and hazardous units be considered as well as the synergistic effects of radionuclides, chemicals and bio-agents (combined) on human and ecological receptors.

Sincerely,

Pamela Sihvola

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STATE OF
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Re: General comments on the Lawrence Berkeley National Laboratory's Draft Corrective Measures Study (CMS), California Environmental Quality Act (CEQA) Initial Study, Negative Declaration, Statement of Basis and Environmental Assessment under the National Environmental Policy Act (NEPA).

Dear Mr. Ahmad and Mr. Patel,

At the workshop portion of the May 26, 2005 Public Hearing regarding the proposed soil and groundwater cleanup plans at the Lawrence Berkeley National Laboratory there were many good questions asked by members of the community who were not able to stay for the Public Hearing portion held later that night.

During the discussions Berkeley Councilmember Worthington had several questions but also stated he would not be around for the Public Hearing. You indicated that his questions would be referred to the process. In fairness to others, I have included a CD of the "Questions & Answers" period. I also request that all questions asked during this workshop portion of the meeting be considered as part of the Public Hearing record. I also ask that DTSC have this audio recording transcribed so community questions can be responded to in writing by DTSC.

I will be happy to provide the names of all those from the community who asked questions on the CD.

Sincerely,

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